



May 16, 2007

Mr. Tim Connelly  
3M Installation Services  
Building 216-2S-03  
3M Center  
St. Paul, MN 55144-1000

Subject: Ethylene Oxide Sampling  
3M Center  
Building 270 Roof  
IHSC Project Number: M07-485

Dear Mr. Connelly:

Attached are the analytical results for the samples that Industrial Hygiene Services Corporation (IHSC) collected from 3M Center, Building 270 roof on May 3, 2007. IHSC based the scope of work on conversations with Tim Connelly – 3M Installation Services, Jeff Schadt – 3M HSET for Buildings 260/270 and Kelvin Witcher - 3M Building 270 Sterilization Lab.

In response to Tim Connelly's request, IHSC placed five (5) 3M Ethylene Oxide Monitors – Series 3551 on the roof of building 270. Monitors were setup downwind from the ethylene oxide exhaust stack. The monitors were placed in five (5) foot increments starting with the first badge being (10) feet from the exhaust stack. IHSC placed four monitors on the upper roof and one on the lower roof approximately sixty (60) feet away from the exhaust stack.

The weather at 7:30 AM was sunny and breezy with the wind blowing from the east-northeast.

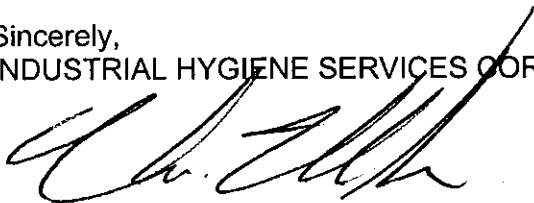
IHSC setup the badges before the process began to ensure no exposure to the ethylene oxide. 3M then ran the ethylene oxide sterilization process for approximately 10 hours.

3M finished the process at 6:00 PM and IHSC waited an additional 30 minutes to ensure no exposure to the ethylene oxide. IHSC retrieved the Ethylene Oxide Monitors after approximately 11-hours, and submitted the samples to an accredited laboratory. The laboratory analyzed the five samples for ethylene oxide. The weather at 6:30 PM was sunny and breezy with the wind blowing from the east-northeast.

The attached laboratory report presents the analytical results for your review. Table 1 presents selected permissible exposure limits and the calculated time weighted averages (TWA) for an 8-hour day.

If you have any questions or if I can be of further service, please call me directly at 651-287-5373.

Sincerely,  
INDUSTRIAL HYGIENE SERVICES CORPORATION

A handwritten signature in black ink, appearing to read "N. S. Mueller", written over the company name.

Nicholas S. Mueller  
Project Manager

Laboratory Analytical Results  
Table 1 – Ethylene Oxide Results

**Table 1**

**Ethylene Oxide Results**  
**Building 270 Roof**

<b>Sample Location</b>	<b>Run Time</b>	<b>Reported Results</b>	<b>Calculated Results (8-Hour TWA)</b>
Upper Roof, 10 ft from Stack	664 Minutes	<0.0636 PPM	<0.0460 PPM
Upper Roof, 15 ft from Stack	664 Minutes	<0.0636 PPM	<0.0460 PPM
Upper Roof, 20 ft from Stack	664 Minutes	<0.0636 PPM	<0.0460 PPM
Upper Roof, Edge of Roof	668 Minutes	<0.0632 PPM	<0.0454 PPM
Lower Roof, West Side (60 ft)	668 Minutes	<0.0632 PPM	<0.0454 PPM

OSHA PEL = 1 PPM  
OSHA STEL = 5 PPM  
ACGIH TLV = 1 PPM  
NIOSH TWA = <0.1 PPM

**NOTES**

- A. The Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limit (PEL) is the maximum 8-hour time-weighted average (TWA) concentration that an employee may be exposed to in a 40-hour work week. The OSHA PELs are legal enforceable standards.
- B. The American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Value (TLV) is defined as the time-weighted average concentration for a normal 8-hour workday, and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. The ACGIH TLVs are recommended limits, but are not legal or enforceable standards.
- C. The Short-Term Exposure Limit (STEL) is a 15-minute time-weighted average employee exposure, which should not be exceeded any time during a workshift.
- D. National Institute for Occupational Safety and Health (NIOSH), recommendations – non-enforceable

# **BRAUN INTERTEC**

Braun Intertec Corporation  
11001 Hampshire Avenue S.  
Minneapolis, MN 55438

Phone: 952.995.2000  
Fax: 952.995.2020  
Web: braunintertec.com

Mr. Nick Mueller  
Industrial Hygiene Services Corporation  
4205 White Bear Pkwy, Suite 500  
Vadnais Heights, MN 55110

May 15, 2007

Work Order: 0702503

RE: M07-485

Dear Nick Mueller:

Braun Intertec Corporation received samples for the project identified above on May 04, 2007.  
Analytical results are summarized in the following report.

All routine quality assurance procedures were followed, unless otherwise noted.

Where possible, the samples will be retained by the laboratory for 14 days following issuance of the initial final report. The samples will be disposed of or returned at that time.

We appreciate your decision to use Braun Intertec Corporation for this project. We are committed to being your vendor of choice to meet your analytical chemistry needs.

If you have any questions please contact me at the above phone number.

Sincerely,  
BRAUN INTERTEC CORPORATION



Richard A. Maw  
Project Scientist



AIHA 101103

Providing engineering and environmental solutions since 1957

Industrial Hygiene Services Corporation  
4205 White Bear Pkwy, Suite 500  
Vadnais Heights, MN 55110

Client Ref: M07-485  
Client Contact: Mr. Nick Mueller  
PO Number:

Work Order #: 0702503  
Project Mgr: Richard A. Maw  
Account ID: 124597

## Qualifiers and Abbreviations

gp	The relative percent difference (RPD) for the laboratory control sample and laboratory control sample duplicate is outside of laboratory control limits.
COC	Chain of Custody
MRL	Method Reporting Limit
ppm	Parts per million in Air
NA	Not Applicable
NR	Not Reported
%Rec	Percent Recovery
RPD	Relative Percent Difference

Industrial Hygiene Services Corporation  
4205 White Bear Pkwy, Suite 500  
Vadnais Heights, MN 55110

Client Ref: M07-485  
Client Contact: Mr. Nick Mueller  
PO Number:

Work Order #: 0702503  
Project Mgr: Richard A. Maw  
Account ID: 124597

## SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Air Volume (L) / Time (Min)	Date Sampled	Date Received
PS5807, Upper Roof 10 ft from stack	0702503-01	Monitor	664	05/03/07 00:00	05/04/07 12:49
PS6183, Upper Roof 15 ft from stack	0702503-02	Monitor	664	05/03/07 00:00	05/04/07 12:49
PS6123, Upper Roof 20 ft from stack	0702503-03	Monitor	664	05/03/07 00:00	05/04/07 12:49
PS6166, Edge of Upper Roof	0702503-04	Monitor	668	05/03/07 00:00	05/04/07 12:49
PS6184, Lower Level Roof, West Side	0702503-05	Monitor	668	05/03/07 00:00	05/04/07 12:49



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952.995.2000 Phone  
952.995.2020 Fax

Industrial Hygiene Services Corporation 4205 White Bear Pkwy, Suite 500 Vadnais Heights, MN 55110	Client Ref: M07-485 Client Contact: Mr. Nick Mueller PO Number:	Work Order #: 0702503 Project Mgr: Richard A. Maw Account ID: I24597
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**PS5807, Upper Roof 10 ft from stack**

**0702503-01 (Monitor)**

**5/3/07 0:00**

**Organic Compounds**

Analyte	Result	MRL	Units	Dilution	Prepared	Analyzed	Method	Notes
Ethylene Oxide	< 0.0636	0.0636	ppm	1	5/8/07	5/9/07	3M-IH 4	gp

Industrial Hygiene Services Corporation 4205 White Bear Pkwy, Suite 500 Vadnais Heights, MN 55110	Client Ref: M07-485 Client Contact: Mr. Nick Mueller PO Number:	Work Order #: 0702503 Project Mgr: Richard A. Maw Account ID: I24597
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**PS6183, Upper Roof 15 ft from stack**

**0702503-02 (Monitor)**

**5/3/07 0:00**

**Organic Compounds**

Analyte	Result	MRL	Units	Dilution	Prepared	Analyzed	Method	Notes
Ethylene Oxide	< 0.0636	0.0636	ppm	1	5/8/07	5/9/07	3M-IH 4	gp



Industrial Hygiene Services Corporation 4205 White Bear Pkwy, Suite 500 Vadnais Heights, MN 55110	Client Ref: M07-485 Client Contact: Mr. Nick Mueller PO Number:	Work Order #: 0702503 Project Mgr: Richard A. Maw Account ID: I24597
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## PS6123, Upper Roof 20 ft from stack

0702503-03 (Monitor)

5/3/07 0:00

### Organic Compounds

Analyte	Result	MRL	Units	Dilution	Prepared	Analyzed	Method	Notes
Ethylene Oxide	< 0.0636	0.0636	ppm	1	5/8/07	5/9/07	3M-IH 4	gp

# BRAUN INTERTEC

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Industrial Hygiene Services Corporation  
4205 White Bear Pkwy, Suite 500  
Vadnais Heights, MN 55110

Client Ref: M07-485  
Client Contact: Mr. Nick Mueller  
PO Number:

Work Order #: 0702503  
Project Mgr: Richard A. Maw  
Account ID: I24597

## PS6166, Edge of Upper Roof

0702503-04 (Monitor)

5/3/07 0:00

### Organic Compounds

Analyte	Result	MRL	Units	Dilution	Prepared	Analyzed	Method	Notes
Ethylene Oxide	< 0.0632	0.0632	ppm	1	5/8/07	5/9/07	3M-IH 4	gp

Industrial Hygiene Services Corporation  
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Client Ref: M07-485  
Client Contact: Mr. Nick Mueller  
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Work Order #: 0702503  
Project Mgr: Richard A. Maw  
Account ID: I24597

## PS6184, Lower Level Roof, West Side

0702503-05 (Monitor)

5/3/07 0:00

### Organic Compounds

Analyte	Result	MRL	Units	Dilution	Prepared	Analyzed	Method	Notes
Ethylene Oxide	< 0.0632	0.0632	ppm	1	5/8/07	5/9/07	3M-IH 4	gp

Industrial Hygiene Services Corporation  
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Vadnais Heights, MN 55110

Client Ref: M07-485  
Client Contact: Mr. Nick Mueller  
PO Number:

Work Order #: 0702503  
Project Mgr: Richard A. Maw  
Account ID: I24597



## CHAIN - OF - CUSTODY RECORD

4205 White Bear Parkway  
Suite 500  
Vadnais Heights, MN 55110  
651-766-9811  
651-766-9822 Fax

IHS PROJECT NO. <b>M07-485</b>		PAGE <b>1</b> OF <b>1</b>	ANALYSIS REQUESTED				LAB NAME <b>BRAUN</b>	
PROJECT MANAGER <b>NICK MUELLER</b>		TURNAROUND REQUESTED					LAB USE ONLY	
PROJECT NAME <b>BUILD 270 EMPLOYEE CRUISE</b>		<input checked="" type="checkbox"/> NORMAL					LABORATORY PROJECT NO.	
PROJECT LOCATION <b>Maplewood, MN</b>		<input type="checkbox"/> RUSH					SAMPLE CONDITION: ATTESTED	
SAMPLERS <b>See Map</b>		<input type="checkbox"/> OTHER					CHILLED Y/N <b>N</b>	
SAMPLE ID	SAMPLE LOCATION (DESCRIPTION)	DATE/TIME SAMPLED	SAMPLE MATRIX: SOLID/LIQUID, DUST, AIR/IRON, SOLID, OTHER	ANALYSIS REQUESTED	NUMBER OF CONTAINERS	SAMPLE CONDITION: COMMENTS	LABORATORY SAMPLE NUMBER	
PS 5807	UPPER ROOF, WEST FRONT STAIR	5/31/07 1304 min	0 X		1	5-2-26-23 Sampling time 7:23-7:27	-01	
PS 6123	" " 15 FT. FROM STAIR	5/31/07 1304 min	0 X		1	7:25-7:27	-02	
PS 6123	" " 20 FT. FROM STAIR	5/31/07 1304 min	0 X		1	7:25-7:27	-03	
PS 6166	" " EDGE OF LOWER ROOF	5/31/07 1308 min	0 X		1	7:23-7:31	-04	
PS 6184	LOWER LEVEL ROOF, WEST SIDE	5/31/07 1308 min	0 X		1	7:23-7:31	-05	
GENERAL COMMENTS								
TOTAL NUMBER OF CONTAINERS								
RELINQUISHED BY (SIGNATURE)	DATE	RELINQUISHED BY (SIGNATURE)	DATE	RELINQUISHED BY (SIGNATURE)	DATE	RELINQUISHED BY (SIGNATURE)	DATE	
DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	
DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	
DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	